

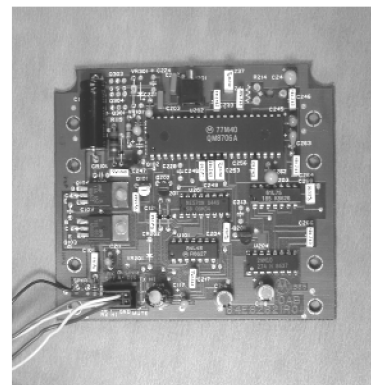
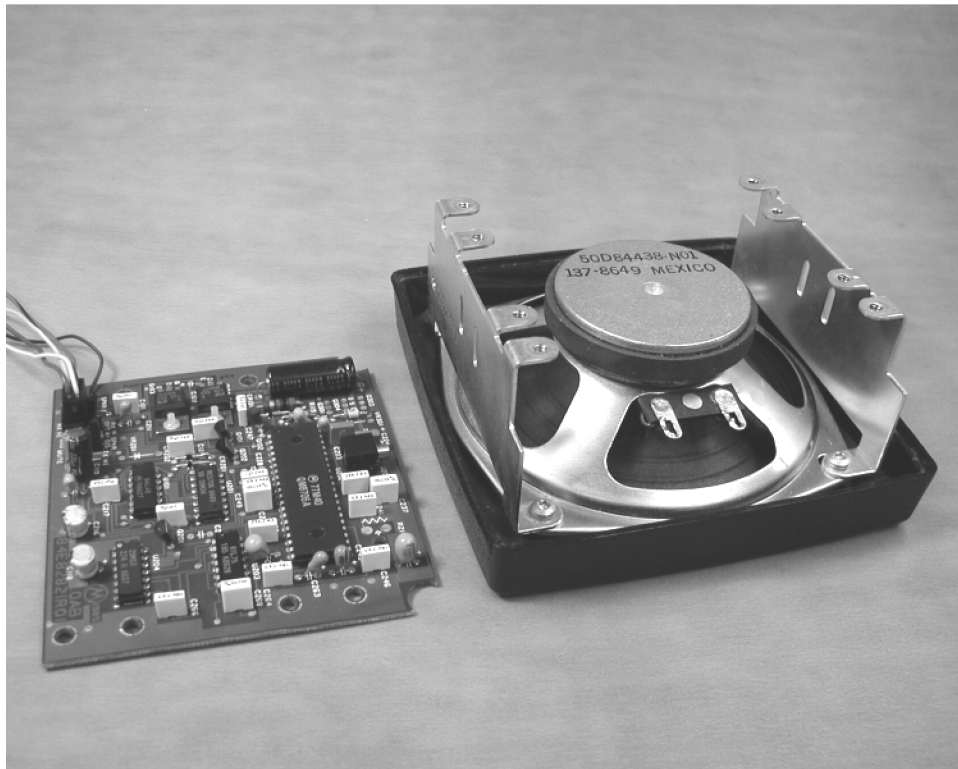
IMPORTANT NOTICE

If your Motorola Amplified Speaker bracket and PC board do *not* look like the examples shown below, there is a significant chance that the PC board described in the following pages will NOT fit into the speaker case properly. In that case, contact me, NØSS, for a possible alternate PC board design which might fit. I do have a design for a slightly older version of the same amplified speaker.

PC Board Nomenclature (ID information):

Etched into Component side of board: 83E8281R01

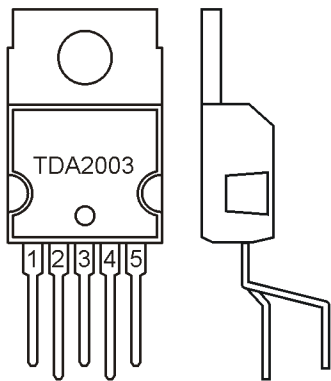
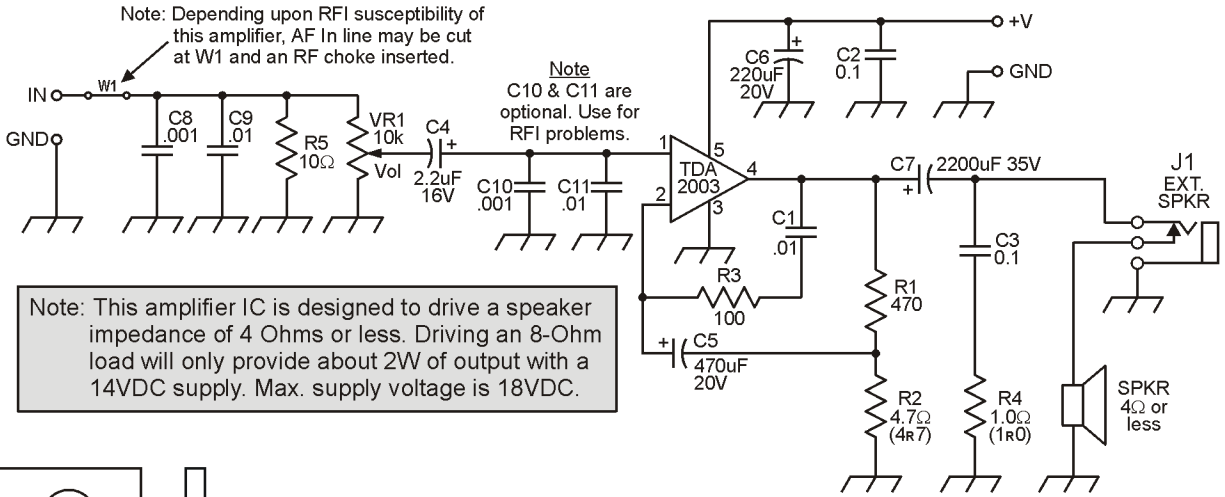
Stamped (in black) on solder side of board: SLN4244A



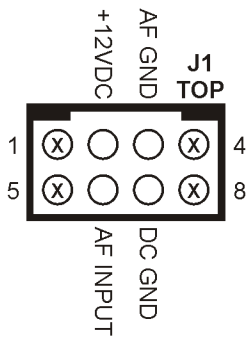
TDA2003 5W AF Amp

This PC board was specifically designed to fit into an 'older-style' Motorola Amplified Speaker Enclosure. See previous page for further reference info.

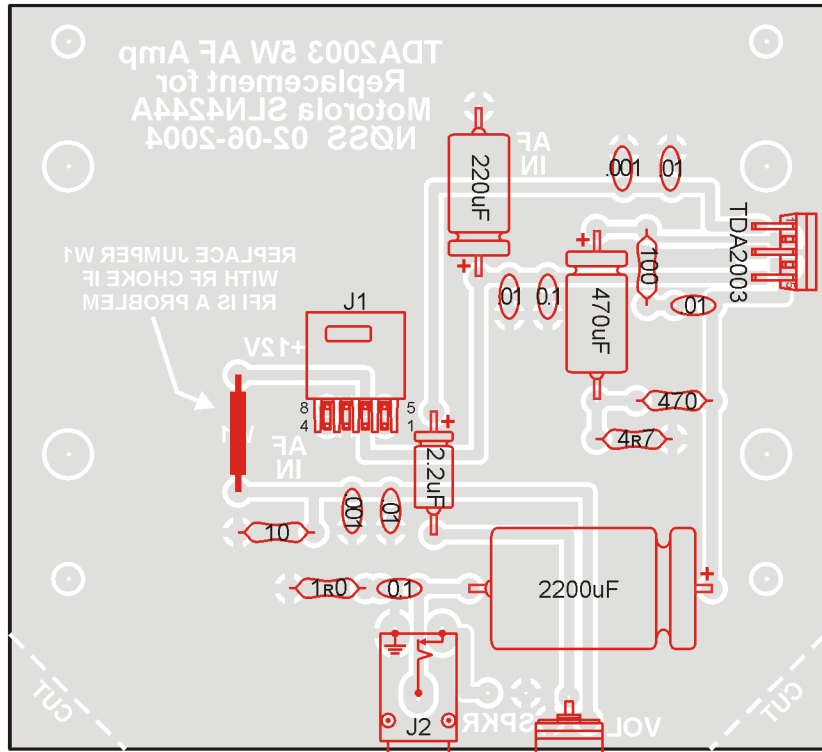
by: Tom Hammond, NØSS, 01/30/2004



- 5 - Vss
- 4 - Output
- 3 - Gnd
- 2 - Inverting Input
- 1 - Non-Inverting Input



Note: Because the decimal point is so difficult to see on the parts placement diagram, the 1.0Ω and the 4.7Ω resistors are labeled "1R0" and "4R7".



PC board as viewed from component side

Attach an appropriate HEATSINK of your choice to the (grounded) tab of TDA2003

PC Board cut size: 4-1/4" H x 3-7/8" W

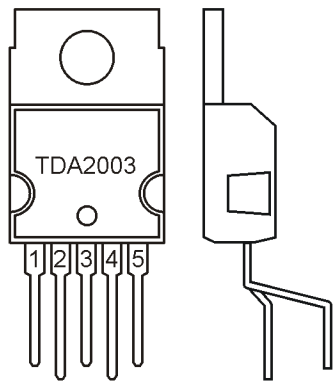
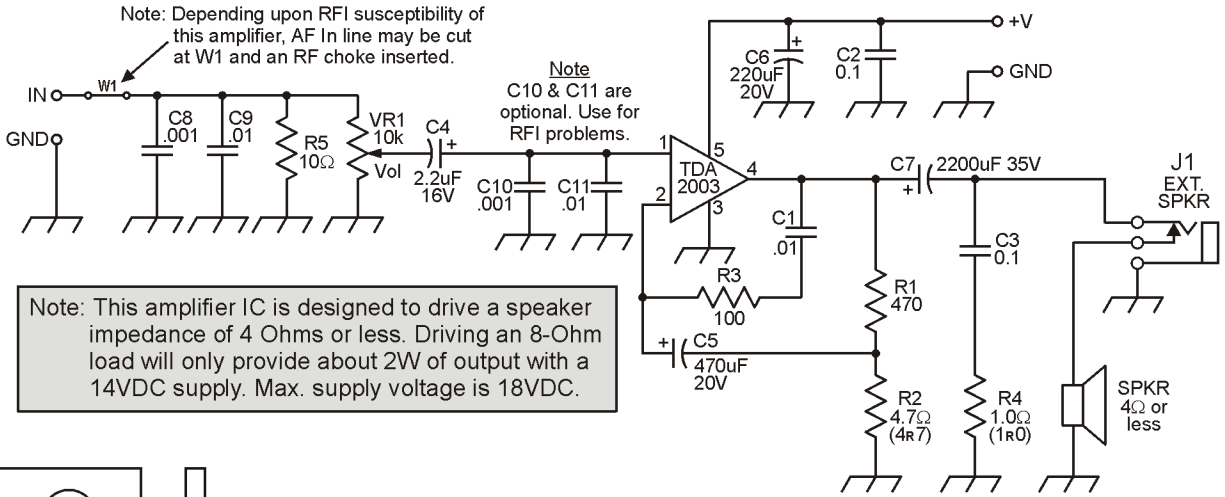
VERY IMPORTANT ASSEMBLY NOTE

Install the TDA2003 IC LAST. When installing the TDA2003V IC, insert it into the holes in the PC board, but **DO NOT SOLDER**. Then install the PC board onto the frame of the speaker and attach the tab of the TDA2003V to the frame (which will be used as the heatsink). Once both the PC board *and* the IC are installed, solder the IC to the PC board.

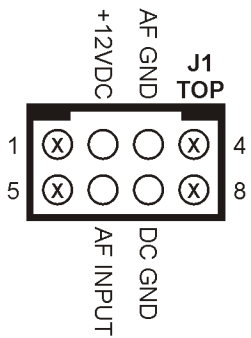
TDA2003 5W AF Amp

This PC board was specifically designed to fit into an 'older-style' Motorola Amplified Speaker Enclosure. See previous page for further reference info.

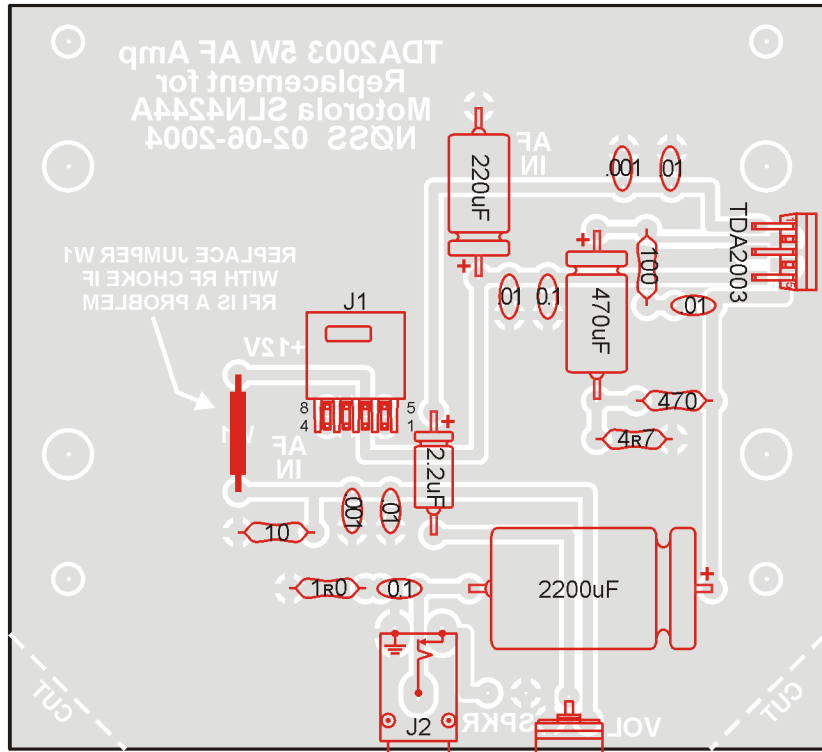
by: Tom Hammond, NØSS, 01/30/2004



- 5 - Vss
- 4 - Output
- 3 - Gnd
- 2 - Inverting Input
- 1 - Non-Inverting Input



Note: Because the decimal point is so difficult to see on the parts placement diagram, the 1.0Ω and the 4.7Ω resistors are labeled "1R0" and "4R7".



Attach an appropriate HEATSINK of your choice to the (grounded) tab of TDA2003

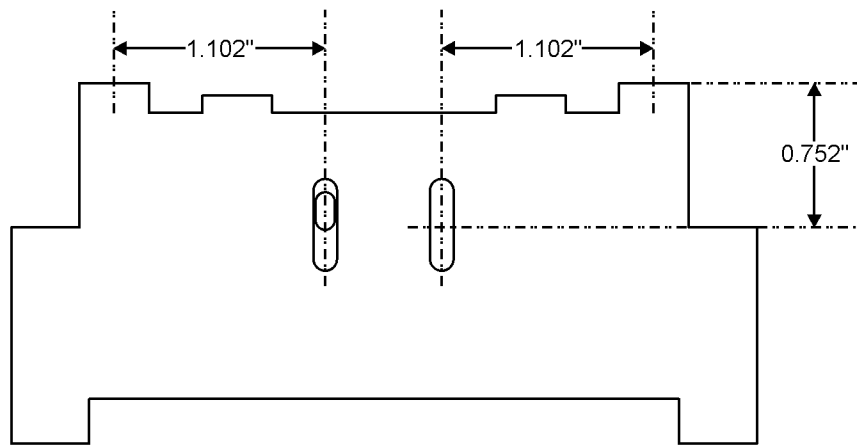
PC board as viewed from component side

PC Board cut size: 4-1/4" H x 3-7/8" W

VERY IMPORTANT ASSEMBLY NOTE

Install the TDA2003 IC LAST. When installing the TDA2003V IC, insert it into the holes in the PC board, but **DO NOT SOLDER**. Then install the PC board onto the frame of the speaker and attach the tab of the TDA2003V to the frame (which will be used as the heatsink). Once both the PC board *and* the IC are installed, solder the IC to the PC board.

This is a scale drawing of the PC board support brackets in the Motorola Amplified Speaker. It was used to design this PC board wherein the bracket is used as the heat-sink for the TDA2003 AF Amplifier IC.

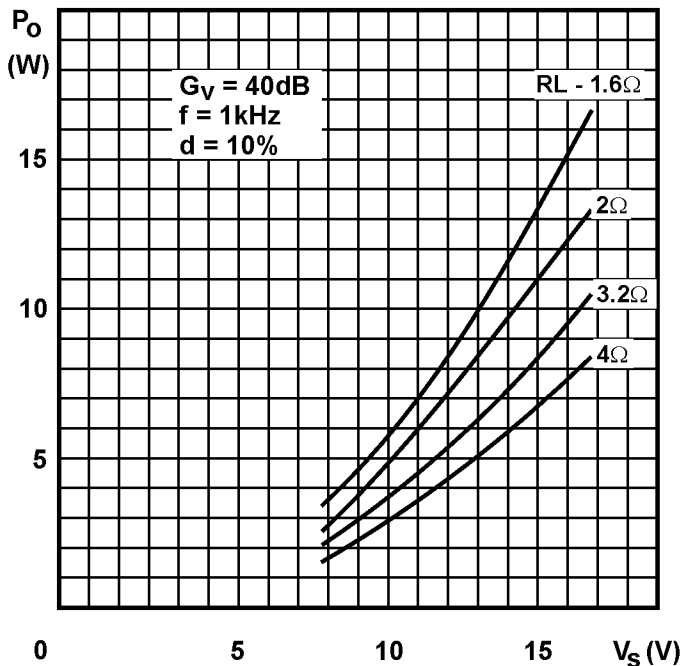


Factory Specification Performance Data

source: <http://www.st.com/stonline/books/pdf/docs/1449.pdf>

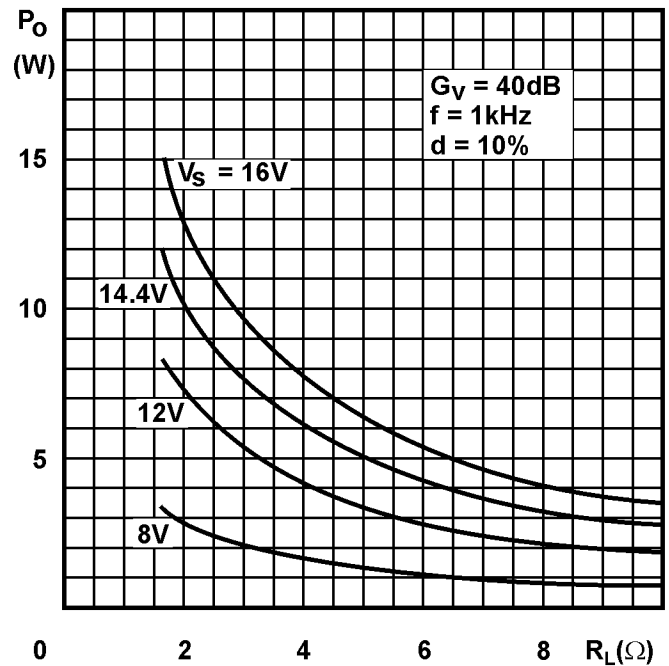
TDA2003

Output power vs. supply voltage



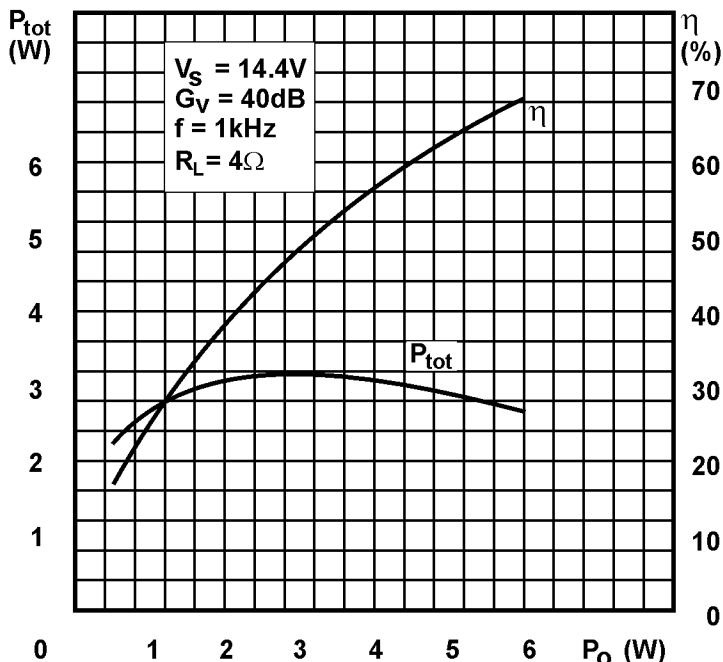
TDA2003

Output power vs. load resistance



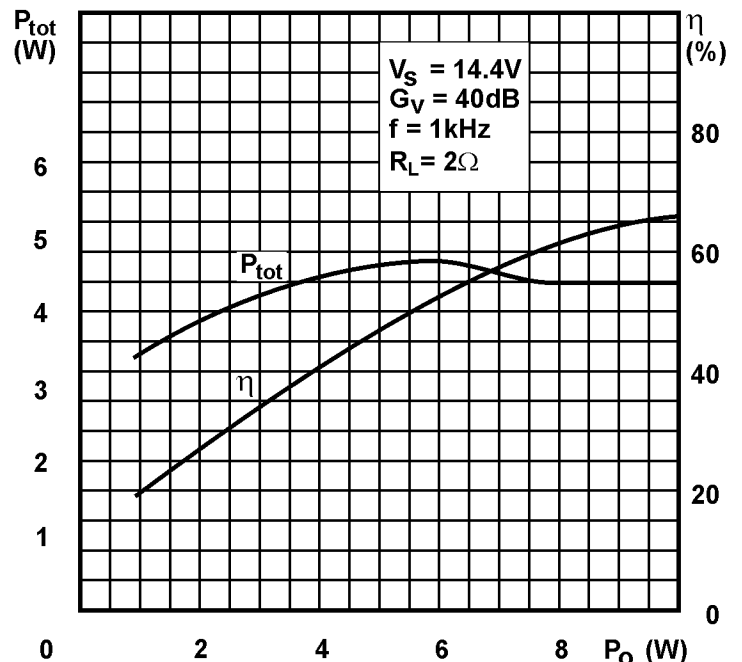
TDA2003

Power dissipation and efficiency vs. output power ($R_L = 4\Omega$)



TDA2003

Power dissipation and efficiency vs. output power ($R_L = 2\Omega$)



IMPORTANT NOTICE

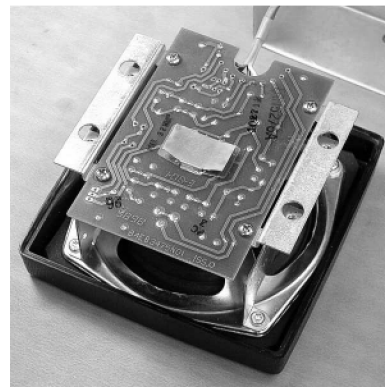
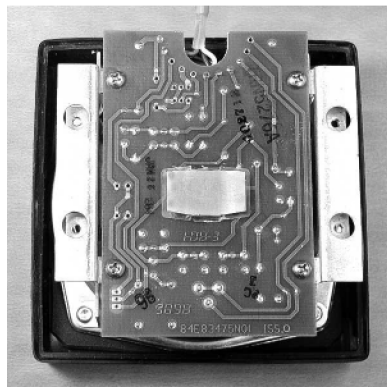
If your Motorola Amplified Speaker bracket and PC board do *not* look like the examples shown below, there is a significant chance that the PC board described in the following pages will NOT fit into the speaker case properly. In that case, contact me, NØSS, for a possible alternate PC board design which might fit. I do have a design for a slightly newer version of the same amplified speaker.

Speaker ID Nomenclature Information:

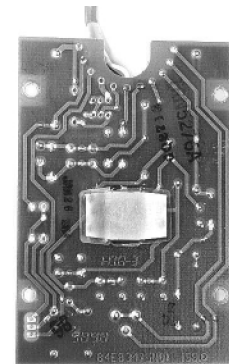
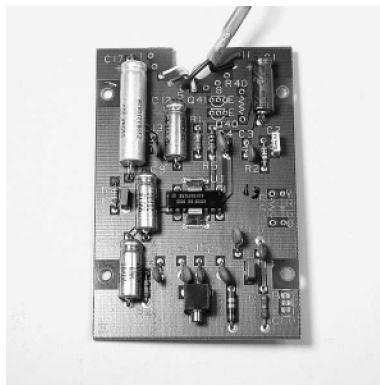
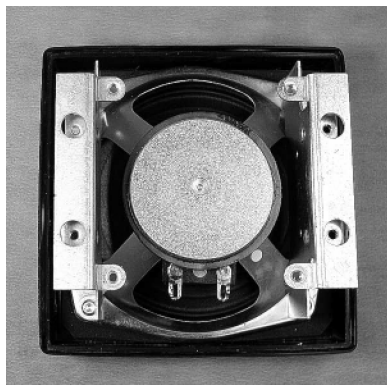
Etched into Foil side of board: 84E83475N01

Stamped (in black) on solder side of board: TRN5276A

Stamped (in black) on back of speaker case: TLN2435A



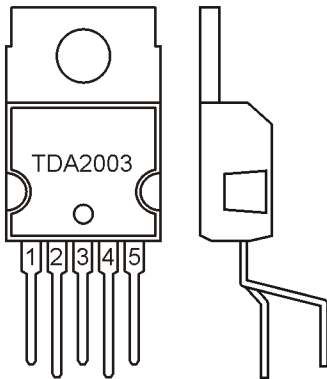
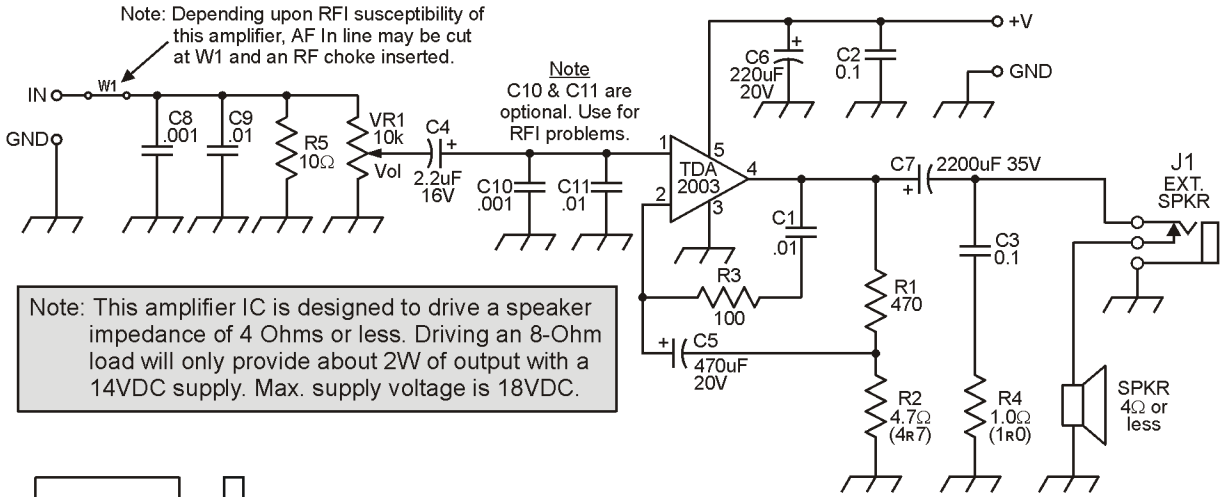
Note the design of the PC board support frame. The PC board fits INSIDE the frame, supported by the two inner tabs.



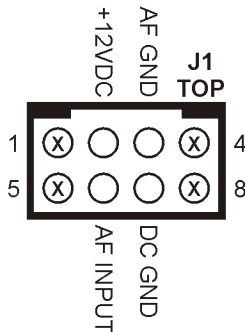
TDA2003 5W AF Amp

This PC board was specifically designed to fit into an 'older-style' Motorola Amplified Speaker Enclosure. See previous page for further reference info.

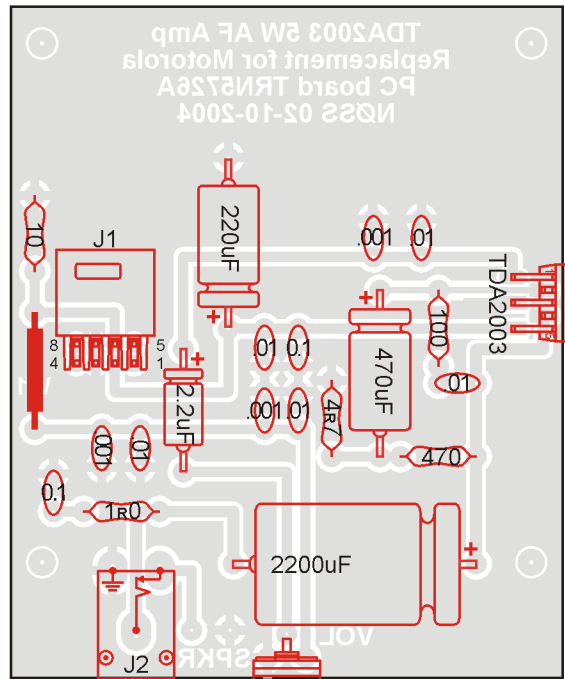
by: Tom Hammond, NØSS, 02/10/2004



- 5 - Vss
- 4 - Output
- 3 - Gnd
- 2 - Inverting Input
- 1 - Non-Inverting Input



Note: Because the decimal point is so difficult to see on the parts placement diagram, the 1.0Ω and the 4.7Ω resistors are labeled "1r0" and "4r7".



PC board as viewed from component side

Attach the (grounded) TAB of the TDA2003V to the PC board mounting frame.

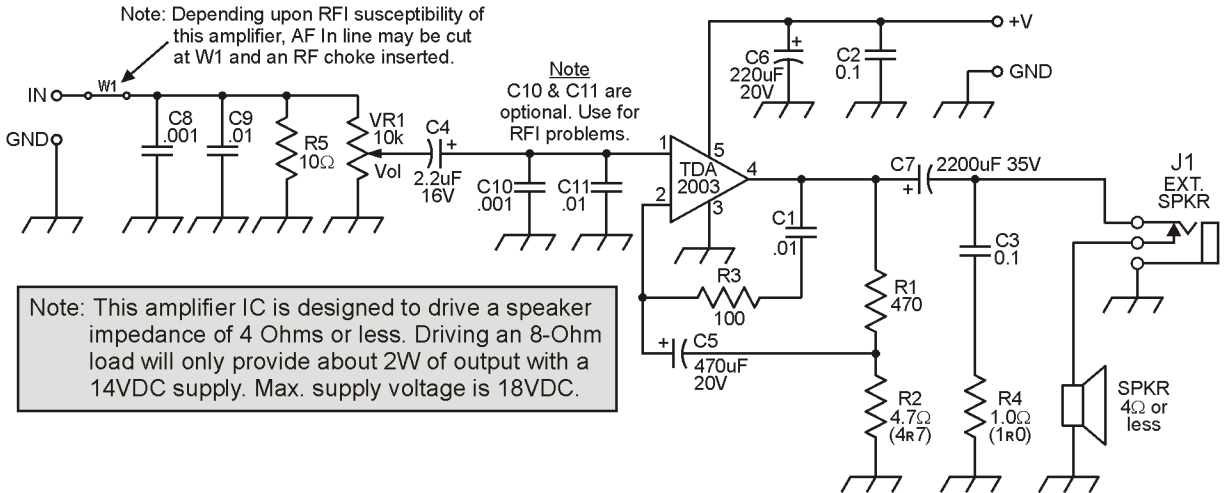
PC Board cut size: 3-1/2" H x 2-7/8" W

VERY IMPORTANT ASSEMBLY NOTE

Install the TDA2003 IC LAST. When installing the TDA2003V IC, insert it into the holes in the PC board, but **DO NOT SOLDER**. Then install the PC board onto the frame of the speaker and attach the tab of the TDA2003V to the frame (which will be used as the heatsink). Once both the PC board *and* the IC are installed, solder the IC to the PC board.

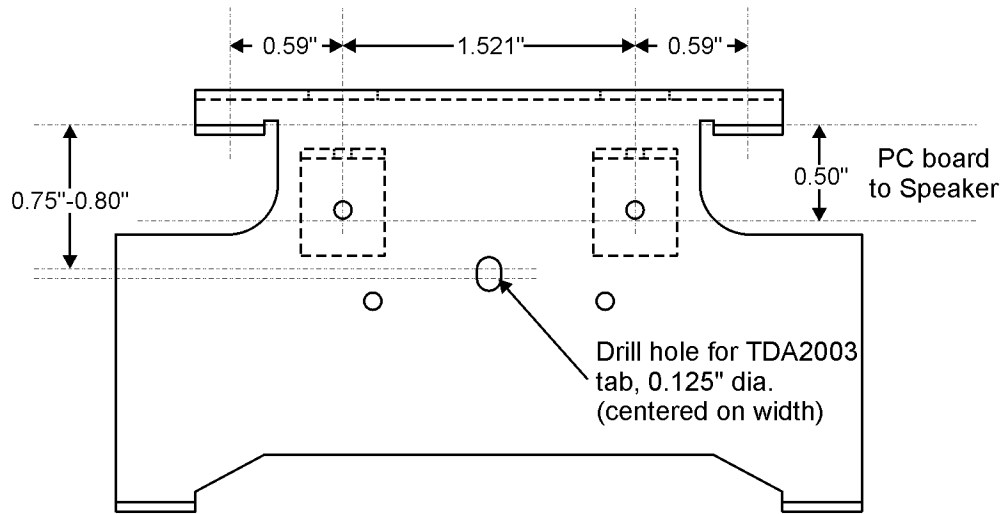
TDA2003 5W AF Amp

Parts List



Part #	Component Description	Mouser Electronics Part #
C1, C2	.001 uF 50V Xicon Ceramic Disk Cap 0.2" lead spacing	140-50Z5-102M
C3, C4, C5	.01 uF 50V Xicon Ceramic Disk Cap 0.2" lead spacing	140-50Z5-103M
C6, C7	0.1 uF 50V AVX Radial Monolithic Cap 0.2" lead spacing	581-SR215C104K
C8	2.2uF 10VDC Xicon Axial Lead Electrolytic Cap	140-XAL10V2.2
C9	220uF 25VDC Xicon Axial Lead Electrolytic Cap	140-XAL25V220
C10	470uF 10VDC Xicon Axial Lead Electrolytic Cap	140-XAL10V470
C11	2,200uF 25VDC Xicon Axial Lead Electrolytic Cap	140-XAL25V2200
R1	1.0Ω (1R0) 1/4W Xicon 5% carbon film resistor	291-1.0
R2	4.7Ω (4R7) 1/4W Xicon 5% carbon film resistor	291-4.7
R3	10Ω 1/4W 5% Xicon 5% carbon film resistor	291-10
R4	100Ω 1/4W 5% Xicon 5% carbon film resistor	291-100
R5	470Ω 1/4W 5% Xicon 5% carbon film resistor	291-470
J1	AMPMODU Dual Row 8-pin (2 X 4) rt. angle PCB-mount header	571-102617-2
J2	DGS 3.5mm Mono Phone Jack w/N-C switch PCB-mount	16PJ528
P1	Mating components for (J1) header listed above: AMPMODU Double Row Housing w/detent latching AMPMODU MOD. IV Recept. Contacts for above (min. of 8 req.)	571-876314 571-877567
U1	STMicroelectronics TDA2003V Audio Amplifier IC	511-TDA2003V
VR1	Tyco 10K Single Turn Cermet Trimmer Long (Horiz.) Shaft	323-409V-10K
VR1	Tyco 10K Single Turn Cermet Trimmer Long (Vert.) Shaft	323-409H-10K

This is a scale drawing of the PC board support brackets in the Motorola Amplified Speaker. It was used to design this PC board wherein the bracket is used as the heat-sink for the TDA2003 AF Amplifier IC.

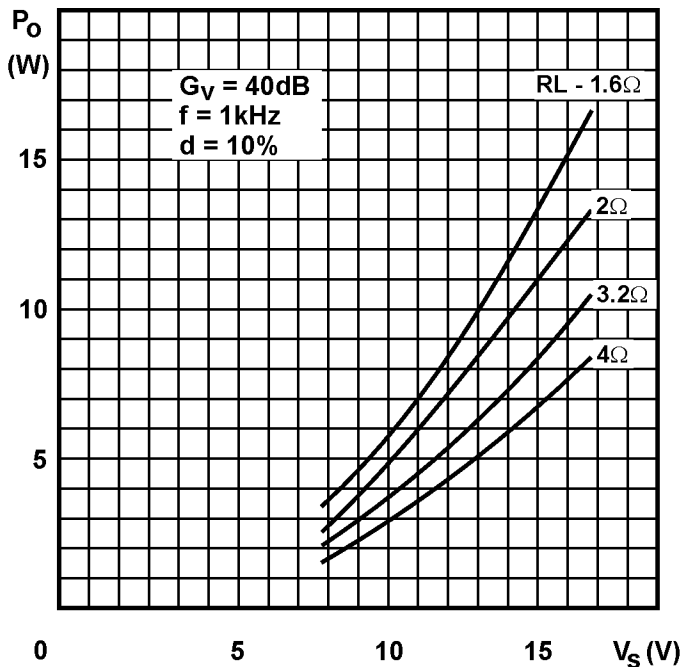


Factory Specification Performance Data

source: <http://www.st.com/stonline/books/pdf/docs/1449.pdf>

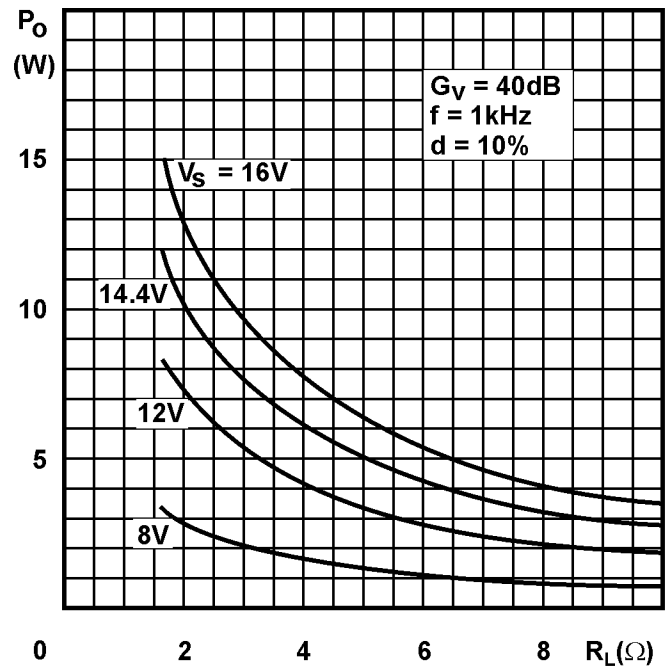
TDA2003

Output power vs. supply voltage



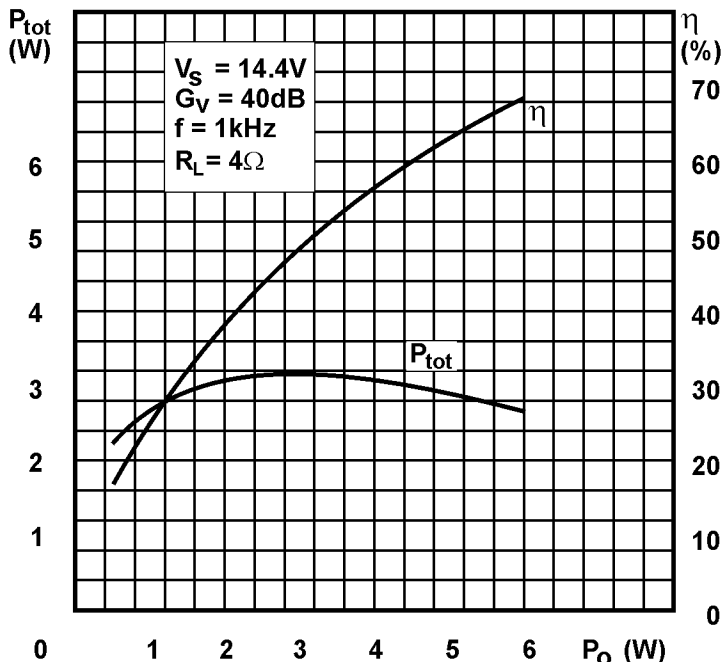
TDA2003

Output power vs. load resistance



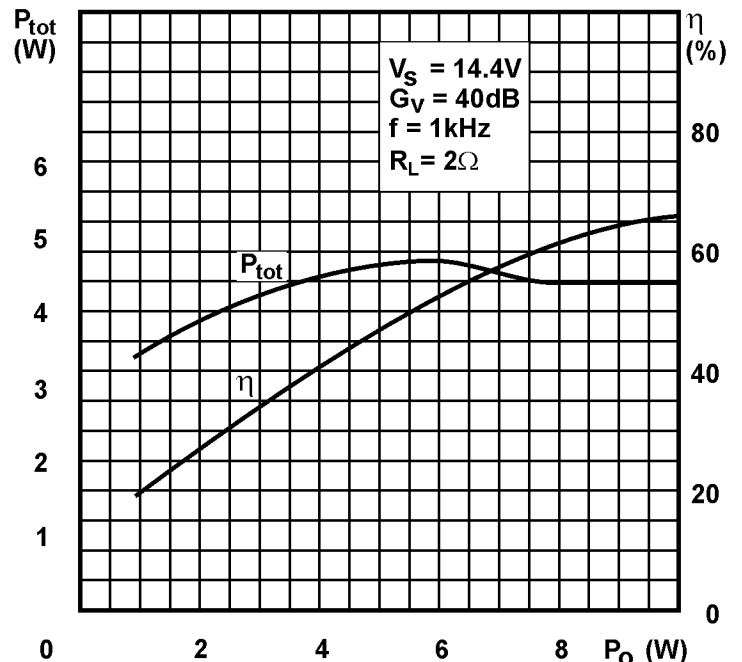
TDA2003

Power dissipation and efficiency vs. output power ($R_L = 4\Omega$)



TDA2003

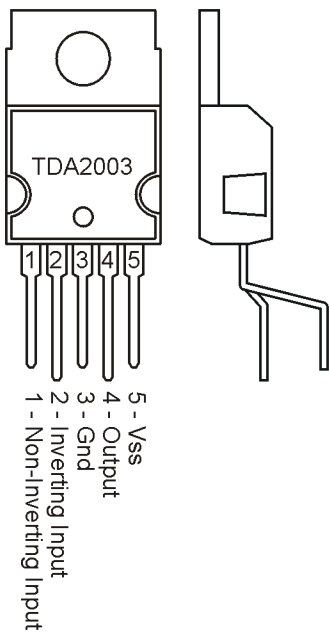
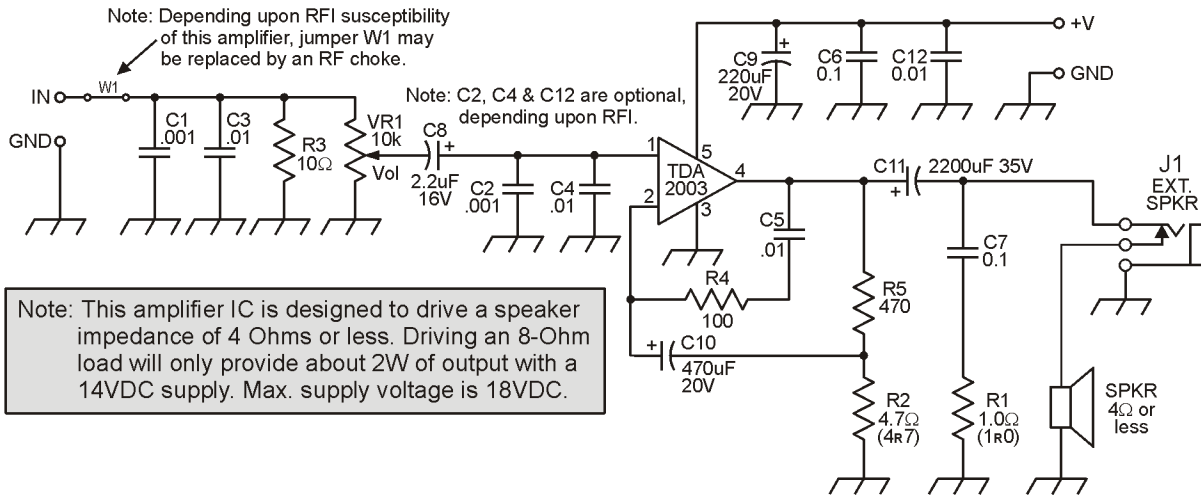
Power dissipation and efficiency vs. output power ($R_L = 2\Omega$)



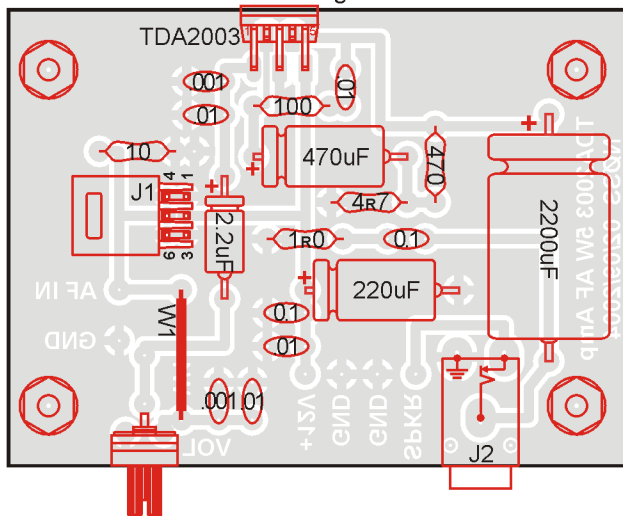
TDA2003V 5W-7W AF Amplifier

For 4-Ohm (or lower) Loads

by: Tom Hammond NØSS 03/30/2004 v.7

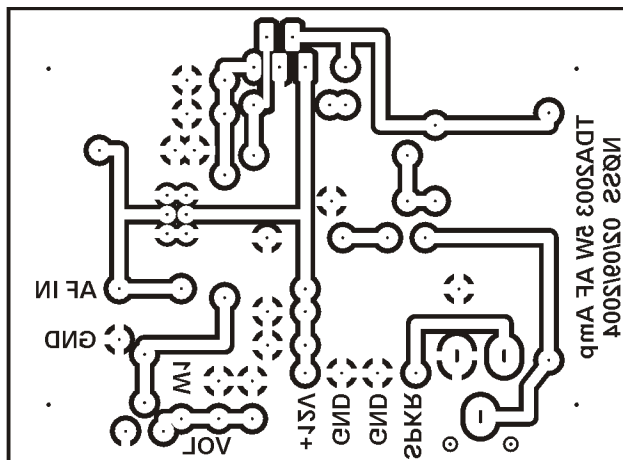
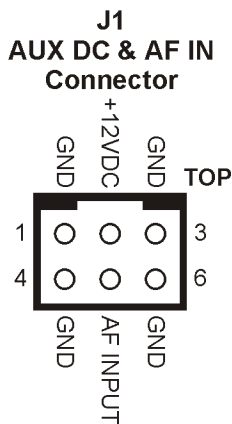


Attach appropriate heatsink to TAB of TDA2003. Tab is grounded.



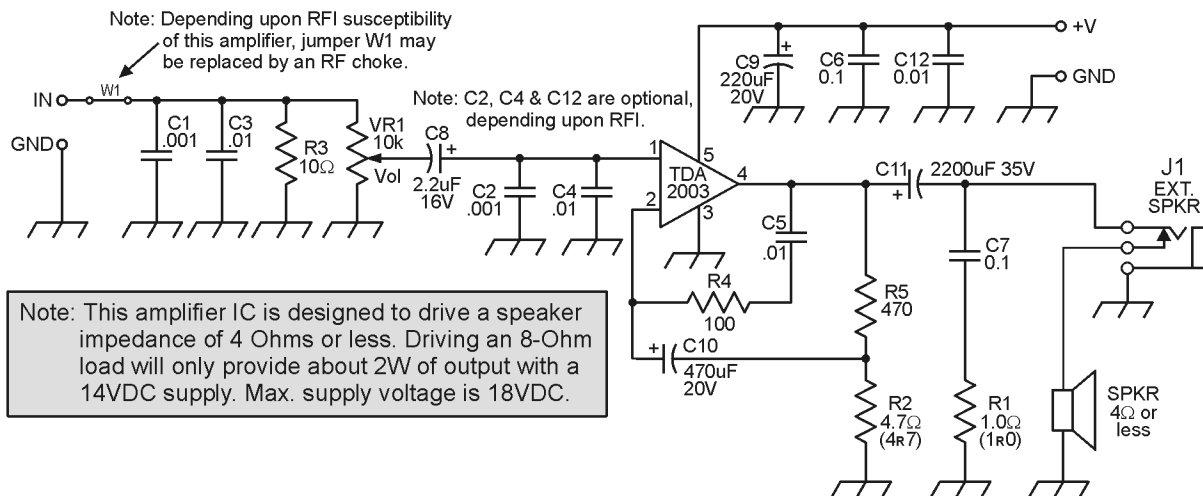
Note: Because the decimal point is so difficult to see on the parts placement diagram, the 1.0Ω and the 4.7Ω resistors are labeled "1r0" and "4r7".

PC Board size: 3-1/4" x 2-3/8" (82.6mm x 60.3mm)



TDA2003 5W-7W AF Amp

Parts List



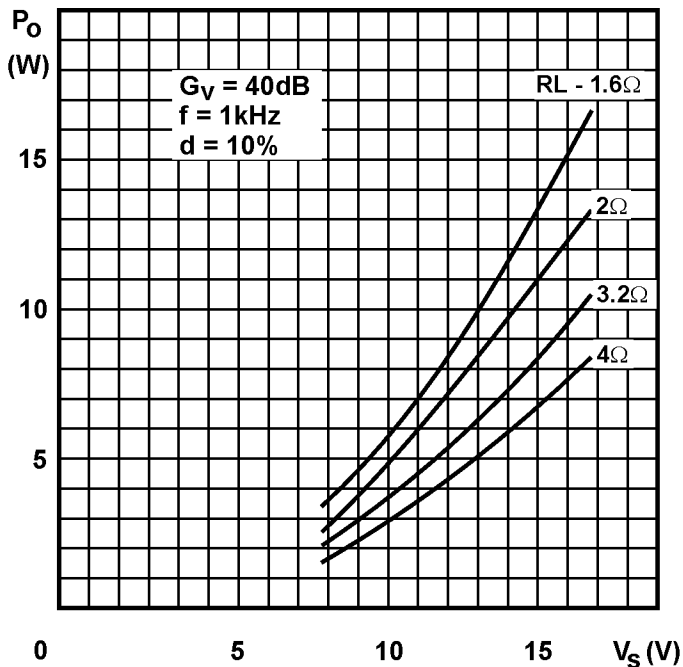
Part #	Component Description	Mouser Electronics Part #
NOTE: C2, C4, & C12 are optional, depending upon the RF susceptibility of the amplifier.		
C1, C2	.001 uF 50V Xicon Ceramic Disk Cap 0.2" lead spacing	140-50Z5-102M
C3-C5, C12	.01 uF 50V Xicon Ceramic Disk Cap 0.2" lead spacing	140-50Z5-103M
C6, C7	0.1 uF 50V AVX Radial Monolithic Cap 0.2" lead spacing	581-SR215C104K
C8	2.2uF 10VDC Xicon Axial Lead Electrolytic Cap	140-XAL10V2.2
C9	220uF 25VDC Xicon Axial Lead Electrolytic Cap	140-XAL25V220
C10	470uF 10VDC Xicon Axial Lead Electrolytic Cap	140-XAL10V470
C11	2,200uF 25VDC Xicon Axial Lead Electrolytic Cap	140-XAL25V2200
R1	1.0Ω (1R0) 1/4W Xicon 5% carbon film resistor	291-1.0
R2	4.7Ω (4R7) 1/4W Xicon 5% carbon film resistor	291-4.7
R3	10Ω 1/4W 5% Xicon 5% carbon film resistor	291-10
R4	100Ω 1/4W 5% Xicon 5% carbon film resistor	291-100
R5	470Ω 1/4W 5% Xicon 5% carbon film resistor	291-470
J1	AMPMODU Dual Row 6-pin rt. angle PCB-mount header	571-102617-1
J2	DGS 3.5mm Mono Phone Jack w/Normally-Closed sw. PCB-mount	16PJ528
Mating components for (J1) header listed above:		
P1	AMPMODU Double Row Housing w/detent latching	571-876312
	AMPMODU MOD. IV Receptacle Contacts for J1 above (6 req.)	571-877567
U1	TDA2003V STMicroelectronics Audio Amplifier IC	511-TDA2003V
VR1	10K Tyco Single Turn Cermet Trimmer Long Horiz. Shaft	323-409V-10K
OR		
VR1	10K Tyco Single Turn Cermet Trimmer Long Vert. Shaft	323-409H-10K

Factory Specification Performance Data

source: <http://www.st.com/stonline/books/pdf/docs/1449.pdf>

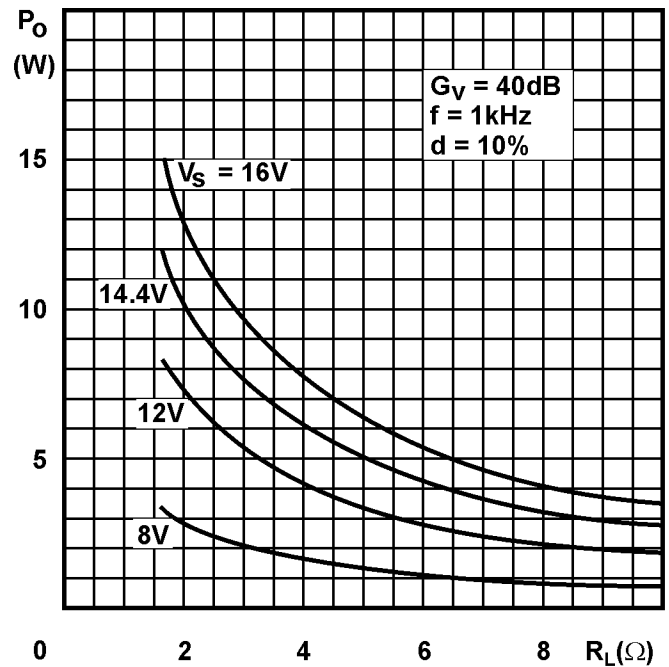
TDA2003

Output power vs. supply voltage



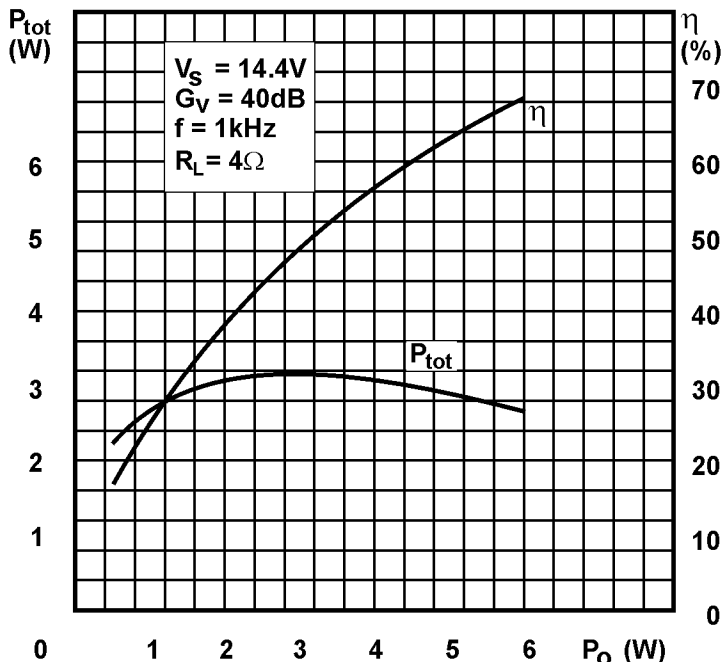
TDA2003

Output power vs. load resistance



TDA2003

Power dissipation and efficiency vs. output power ($R_L = 4\Omega$)



TDA2003

Power dissipation and efficiency vs. output power ($R_L = 2\Omega$)

